

# ***SUBSTITUTE SPECIFICATION***

## **PATENT APPLICATION**

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## **FLEXIBLE LAMINATE FOR COATING AND PROTECTION OF SURFACES**

### **BACKGROUND OF THE INVENTION**

#### **1. Field of the Invention**

[0001] Currently there are any number of laminate materials for covering various surfaces. For example, there are various types of decorative papers known as wallpapers or tapestry papers with various printed or embossed designs that require a glue or an adhesive material covered surface to adhere to the surface to be covered. Once applied, the laminated products are permanent and not removable. There are other laminates made of plastic, some of them consisting of simple plastic sheets for surfacing. Nevertheless, when these are applied to smooth surfaces they tend to slip and are generally unstable, evidencing slippage on the surface plane to which they are applied or overlaid.

[0002] There are other laminated products consisting of woven materials glued to plastic films, these also tend to slip at their surfaces. There are other materials woven of foam materials to avoid slippage, after application the foam separates leaving well defined foam areas at the threads, forming a surface that can only partially adhere, given that there is foam at the threads but not in the spaces between threads. This generates a surface with homogenous areas of foam distribution and homogenous spaces between them without foam that could result in a surface that does not adhere well given the uniformity of the points of contact of the surface to be covered.

[0003] On reviewing prior art, the following patents were found: US 6,130,174 of James J. Hawley, dated October 10, 2000; US 5,863,845 of Thomas Hendrix Owen, dated January 26, 1999; US 5,707,903 of Herbert S. Schottenfeld, dated January 13, 1998.

[0004] The first of these refers to a laminated material that does not slip along a surface and a smooth surface is provided on the other side, and this protects a laminated product comprised by a laminate layer that is generally and continuously flat; a woven layer that includes a fabric covered with a foamed plastic made of a polyvinyl chloride compound and the means of bonding the woven layer with the flat laminated layer. This patent employs for such purpose a woven layer covered with a plastic foam that generates spaces between adjacent threads simply forming thicknesses around the fabric threads and the upper layer is smooth.

[0005] With regard to the second patent indicated, reference is made to a removable cover with non-adhesive and non-slip coating that protects the removable cover for a primary surface, that includes: a substrate with upper and lower surfaces, where at least a portion of the lower surface includes a non-adhesive and non-slip surface; and an upper sheet adhered to the upper surface of the substrate, such that when the lower non-slip surface is in contact with the primary surface, the cover does not slip tangentially or laterally to the primary surface, where the upper sheet is a covered upper sheet and where the covered upper sheet incorporates a coating that is selected from the group that is comprised by coloring, wax, veneer and a combination of these.

[0006] Then the third patent cited refers to a non-slip decorative veneer that protects a laminated veneer for covering generally flat surfaces. This covering includes a non-slip cushion that includes a fabric covered with a polyvinyl chloride compound foam for increasing the extendable firmness, the cushion having first and second faces in opposition and a quantity of open cells extending through the cushion from the first to the second face, the second face of the

cushion being a friction-augmented face adapted to grip the surface and restrict the cushion's movement on the surface plane when the second face contacts the surface, the friction-augmented face is free of adhesive substances; and a cover layer that has opposing first and second faces, the second face of the cover layer being permanently joined to the first face of the non-slip cushion.

[0007] In general terms, the laminates protected by these patents primarily include as a substrate a woven fabric or cloth to which a foam is applied to provide non-slip properties and for bonding to a smooth upper layer by means of an adhesive. Nevertheless the laminates include a smooth upper surface and little adherence on their lower surface.

### **OBJECTIVES OF THE INVENTION**

[0008] This invention has as its main purpose to make available a flexible laminate that will allow the coating and protection of various surfaces, and that it be decorative and anti-slippage.

[0009] Another objective of this invention is to provide the flexible laminate that will also prevent scratches, spots and ill treatment of the surfaces it covers.

[0010] Another objective of the invention is to make available the flexible laminate that in addition will guarantee the flatness of the surface covered so as to allow articles placed on it to slide freely.

[0011] In addition to all those qualities and objectives that will become apparent on describing this invention, supported by the illustrated modalities.

### **BRIEF DESCRIPTION OF THE INVENTION**

[0012] In general terms, the flexible laminate for covering and protecting surfaces, in accordance with this invention, consists of the lamination of two layers of PVC, one composed of an unwoven polyester material saturated with a foamed plastisol in order to generate an adherent surface that will not slip on the surface on which it is placed, the other consisting of a decorative flexible PVC film, smooth or texturized, joined together by means of a PVC adhesive.

[0013] This flexible laminate bonds firmly to the surface to be covered, ensuring its protection and flatness. It also prevents the laminate from sliding over the surface it covers.

[0014] The flexible PVC decorative film can be engraved, imprinted, stamped or any combination thereof.

[0015] The flexible laminate for covering and protecting surfaces has a thickness of approximately 34 or more thousandths of an inch.

[0016] In order to better comprehend the characteristics of the invention, the drawings described following are attached to illustrate, without limitation, this description, of which they are an integral part.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0017] A better understanding of the present invention can be obtained when the detailed description set forth below is reviewed in conjunction with the accompanying drawings, in which:

[0018] Figure 1 shows an upper view of the laminate for covering and protecting surfaces.

[0019] Figure 2 shows a lower view of the non-slip substrate for covering and protecting surfaces.

[0020] Figure 3 shows a cross section of the flexible laminate for covering and protecting surfaces.

[0021] Figure 4 shows a schematic diagram of the method and devices for stamping and laminating, in accordance with this invention.

[0022] Figure 5 illustrates a schematic diagram of the method and devices for impregnating and fusing the plastisol, in accordance with this invention.

[0023] Figure 6 shows a schematic diagram of the method and devices for bonding and conforming the layers in order to form the flexible film for covering and protecting surfaces, in accordance with this invention.

[0024] In order to better understand the invention, a detailed description will be given of some of its modalities, as shown in the drawings that are attached to illustrate, without limitation, this description.

[0025] To better understand the invention, we shall carry out the detailed description of some of the modalities of the same, shown in the drawings with illustrative but not limited purposes, attached to the description herein.

## **DETAILED DESCRIPTION OF THE INVENTION**

[0026] The characteristic details of the flexible laminate for covering and protecting surfaces are clearly shown in the following description and in the illustrative drawings attached, which serve as points of reference to indicate the parts to which reference is made.

[0027] We make reference to Figures 1 and 2 that show upper and lower views, respectively, of the laminate for covering and protecting surfaces. The figures show laminate (1) that includes the upper layer comprised by an upper decorative flexible PVC layer (2), smooth and preferably, as is the case, engraved, and the lower layer composed of a continuous non-woven material (3) saturated with a foamed plastisol (4) that generates a lower irregular surface with spaces covered with foam (5) and spaces free of foam (6), providing an adherent surface having the characteristic of not slipping on the surface on which it is placed.

[0028] With regard to Figure 3 that shows a cross section of the flexible laminate for covering and protecting surfaces, it shows laminate (1) formed by the lower layer composed of the non-woven polyester (3) that is saturated with the foamed plastisol (4); the foamed plastisol generates an irregular lower surface with heterogeneously distributed spaces (5) covered with the foamed material (4) and heterogeneously distributed spaces (6) free of the foamed material (4). The layer composed of the unwoven material (3) saturated with the foamed material (4) is joined by means of an adhesive film (7) to the upper flexible and decorative film (2).

[0029] With reference to Figure 4 that shows a schematic diagram of the method and devices for stamping and laminating, supply spool (8) feeds a film of flexible PVC (2) running through an input accumulator (9) that accumulates the film by means of accumulator rollers (10) and proceeds later to a film stabilizer (11), the film (2) then goes through a series of stamping rollers

(12) that imprint the film with various designs, as desired; once imprinted, the flexible PVC film (2) is wound on to roller (13) for stamped film.

**[0030]** With regard to Figure 5 that illustrates by a schematic diagram the method and devices for impregnating and fusing plastisol, in accordance with this invention, that Figure shows that unwoven polyester (3) is provided from a roll (14) running through some guide rollers (15) that guide it to some rollers (16) applying foamed plastisol (4) from a repository (17); once the foamed plastisol (4) has been applied to the unwoven polyester layer (3), it is run through an oven (18) in order to cure it. When the unwoven polyester (3) impregnated with foamed plastisol (4) comes out of the oven (18), it is run through first cooling rollers (19) and then through guide rollers (20) and then on to second cooling rollers (21) and from there to an accumulator (22) that accumulates it on accumulating rollers (23) to later guide it to a collector spool (24) for unwoven polyester with foamed plastisol, now constituting one film.

**[0031]** With reference to Figure 6 that shows a schematic diagram of the method and devices for bonding and conforming layers in order to form the flexible film for covering and protecting surfaces, in accordance with this invention, that Figure shows that the unwoven polyester (3), impregnated with foamed plastisol (4), once cured is supplied through a roll (25), then run through an adhesive transfer roll (26) placed below which transfers adhesive (27) from the adhesive deposit (28). Then, from a supply spool (29) the flexible PVC decorative laminate (2) is unrolled, joined and coupled to the face of the unwoven polyester layer (3) saturated with foamed plastisol (4) covered with adhesive (27), then passed through pressure rollers (30) and later through a laminator (31) that laminates and simultaneously provides additional pressure to constitute laminate (1) in accordance with this invention. The laminate is finally run through an accumulator (32) via accumulating rollers (33) and is finally wound on to finished product roller (34).

[0032] The invention has been sufficiently described as to allow a person with average knowledge in such matters to reproduce and obtain the results we have mentioned in this invention. Nevertheless, any person skilled in the technical area related to this invention would be capable of making changes not described in this request, so that to apply such changes in a given structure or in its manufacturing process would require the subject matter laid claim to following, such structures should be included within the scope of the invention.